Nanotube Electrodes for Dust Mitigation, Phase II

Completed Technology Project (2011 - 2013)

Project Introduction

Dust mitigation is critical to the survivability of vehicle and infrastructure components and systems and to the safety of astronauts during EVAs and planetary surface operations. By coupling Eikos Invisicon

REG

nanocomposite conductors with existing dust mitigation Dust Shield technology developed at NASA-KSC, the Phase I program demonstrated an enabling approach to producing electrodynamic dust mitigation devices on a wide variety of surfaces not possible with traditional metal based electrode materials. Eikos reproduced proven NASA spiral electrodes using Invisicon

REG

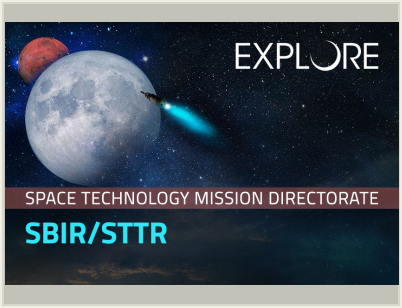
patterned onto transparent plastics, Tyvek

REG

fabric, and silicone rubber sheets; employing inkjet and spray deposition methods, two CNT ink formulations, and four dielectric binders to create working devices. These Invisicon

REG

-based devices are far more flexible then traditional devices and exhibit superior durability to abrasion, elongation, and thermal cycling. A dust mitigation system utilizing this technology has broad value to many NASA mission directorates and terrestrial commercial applications. The Phase II project will build on these successes and integrate the electrode into larger surfaces, and more complex components. Further, extensive dust mitigation, and both environmental and mechanical testing, will be conducted to position this electrode technology for insertion into windows, fabrics, and elastomeric components in space and terrestrial applications.



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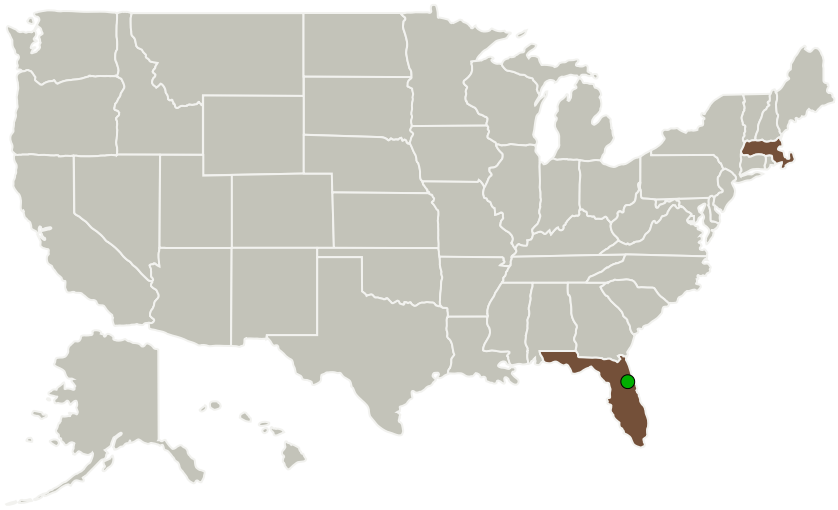
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Eikos, Inc.	Lead Organization	Industry	Franklin, Massachusetts
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations	
Florida	Massachusetts

Project Transitions

June 2011: Project Start

May 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139156)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Eikos, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Paul J Glatkowski

Co-Investigator:

Paul Glatkowski

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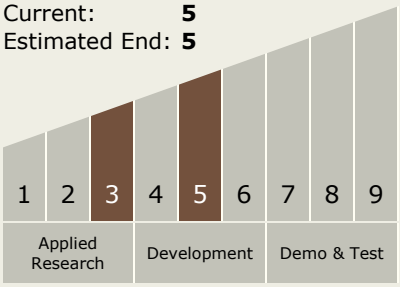
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.5 Particulate Contamination Prevention and Mitigation

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System